



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,586	09/25/2003	Robert O. Martin	KMG2007-US1	7478
36732	7590	09/23/2004	EXAMINER	
LAW OFFICE OF STANLEY K. HILL, PLC			VERBITSKY, GAIL KAPLAN	
P.O. BOX 52050			ART UNIT	
MINNEAPOLIS, MN 55402			PAPER NUMBER	
			2859	
DATE MAILED: 09/23/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/670,586	Applicant(s) MARTIN ET AL.	
	Examiner Gail Verbitsky	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 5-9 and 14-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 10-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 5-9 and 14-42 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>02/17/2004, 01/09/2.</u> | 6) <input type="checkbox"/> Other: ____. |

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 5-9, 14-25, drawn to device and method for detecting wear in a liner using thermocouple, classified in class 374, subclass 179.
- II. Claims 1-4, 10-13, drawn to method for detecting wear in a liner using resistance, classified in class 374, subclass 57.
- III. Claims 26-42, drawn to liner, classified in class 285, subclass 47+.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions, Invention I is directed to using a thermocouple to determine temperature to estimate wear, while Invention II does not require to measure temperature.

3. Inventions III and I are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions, Invention I is directed to using a thermocouple to determine temperature to estimate wear, while Invention III is directed to a liner not to an apparatus for detecting wear in a liner. Invention III can be used with another method and Invention I can be used with another apparatus.

Art Unit: 2859

4. Inventions III and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions, Invention II is directed to method of detecting wear, while Invention III is directed to a liner not to an apparatus for detecting wear in a liner. Invention III can be used with another method and Invention II can be used with another apparatus.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Mr. Hill on August 31, 2004, a provisional election was made with traverse to prosecute the invention of Group II, claims 1-4 and 10-13. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-9 and 14-42 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

7. Claims 1, 10 are objected to because of the following informalities: It is not clear what particular surface applicant means by "outside" surface: the surface close to the device (pump/ conduit), or the surface closer to the fluid? Please note, that in the rejection on the merit, the Examiner considers that the surface close to the fluid is the "outside surface". Also, perhaps, Applicant should show the outside surface in the drawings, in order to clearly describe the invention. Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1, 4, 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millins et al. (U.S. 4535326) [hereinafter Millins] in view of Baldwin et al. (U.S. 446001) [hereinafter Baldwin].

Millins discloses in Fig. 1 a device (pump) utilized to transport corrosive or abrasive fluid medium. The device has a liner 20. The liner contains said fluid medium. The liner 20 also has a subassembly 16 comprising an electrically conductive component (plate) 22 on or near the outside surface of the lining 20. Millins states that the electrically conductive component 22 can be a wire (plural wires) (col. 5, line 33). Thus, the electrically conductive wire/ plate/ component 22, when the liner 20 is worn, becomes worn-through/ exposed to the fluid medium (col. 4, lines 59-68). Millins also teaches to measure a current through the wire indicating the degree of wear of the liner 20. Millins teaches in Fig. 8 to embed the conducting wire 62 at a preselected (desired) distance into the liner 20. This would imply, the need to create some opening/ groove on a (outside) surface of the liner to position the conductive wire.

Millins does not explicitly teach to measure resistance of the wire, as stated in claims 1, 10, and the remaining limitations of claims 1, 4, 10, 13.

Art Unit: 2859

Baldwin discloses a device in the field of applicant's endeavor and teaches to measure resistance of a conductive wire (resistor with resistance tracks/ resistor element) 9 embedded in an abradable ceramic housing (liner with wear, col. 3, line 36) at any predetermined distance and protected by the liner (Figs. 1-3 and entire col. 3). As wear takes place, the tracks of the resistance are broken and its resistance increases and measured (col. 3, line 8), indicating the degree of wear of the liner. As shown in Fig. 2, the resistance is embedded in a groove made in an outside surface and covered with an abradable material (liner) 14 susceptible to wear.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Millins, so as to measure a wear indicative resistance change through the conductive wire, as taught by Baldwin, so as to determine the degree of wear of the liner, in order to warn the operator that necessary actions should be taken to prevent the irreversible failure of the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Millins, so as to position the wire in the opening/ groove/ embed, as taught by Baldwin, so as to allow the wire in contact with the medium, when the liner is worn off, in order to create a measurable electrical circuit indicative of the wear of the liner.

For claim 4: the use of the particular material, i.e., ceramic, as stated in claim 4, for the liner, absent any criticality, is only considered to be the "optimum" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the insulative liner disclosed

by Millins since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. In re Leshin, 125 USPQ 416.

The method steps will be met during the normal operation of the device stated above.

10. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millins and Baldwin, as applied to claims 1, 4, 10, 13 as stated above, and further in view of Hirayama et al. (U.S. 6121617) [hereinafter Hirayama].

Millins and Baldwin disclose the device as stated above in paragraph 9.

They do not explicitly states that the wire of a resistance element is in a zigzag pattern, as stated in claims 2 and 11.

Hirayama teaches in Fig. 2 a sensing wire in a zigzag pattern.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wire, disclosed by Millins, so as to have a zigzag wire, as taught by Hirayama, because both of them are alternate types of sensing wires which will perform the same function, of providing a wear indicative indication by changing a resistance of a resistor element, if one is replaced with the other.

11. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millins and Baldwin, as applied to claims 1, 4, 10, 13 as stated above, and further in view of Ohtsuchi (U.S. 6002564).

Millins and Baldwin disclose the device as stated above in paragraph 9.

They do not explicitly states that the wire of a resistance element is in a spiral pattern, as stated in claims 3 and 12.

Ohtsuchi teaches in Fig. 1 a sensing wire in a spiral pattern.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the wire, disclosed by Millins, so as to have a spiral wire, as taught by Ohtsuchi, because both of them are alternate types of sensing wires which will perform the same function, of providing a wear indicative indication by changing a resistance of a resistor element, if one is replaced with the other.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Any inquiry concerning this communication should be directed to the Examiner Verbitsky who can be reached at (571) 272-2253 Monday through Friday 8:00 to 4:00 ET.

GKV

Gail Verbitsky

Primary Patent Examiner, TC 2800



September 09, 2004